Public Safety
Mobile Radio Communications

PROJECT CHARTER

STATE OF NORTH DAKOTA

INFORMATION TECHNOLOGY DEPARTMENT

600 East Boulevard – Dept. 112
Bismarck, North Dakota 58505-0100

Prepared by:
Information Technology Department
Project Team
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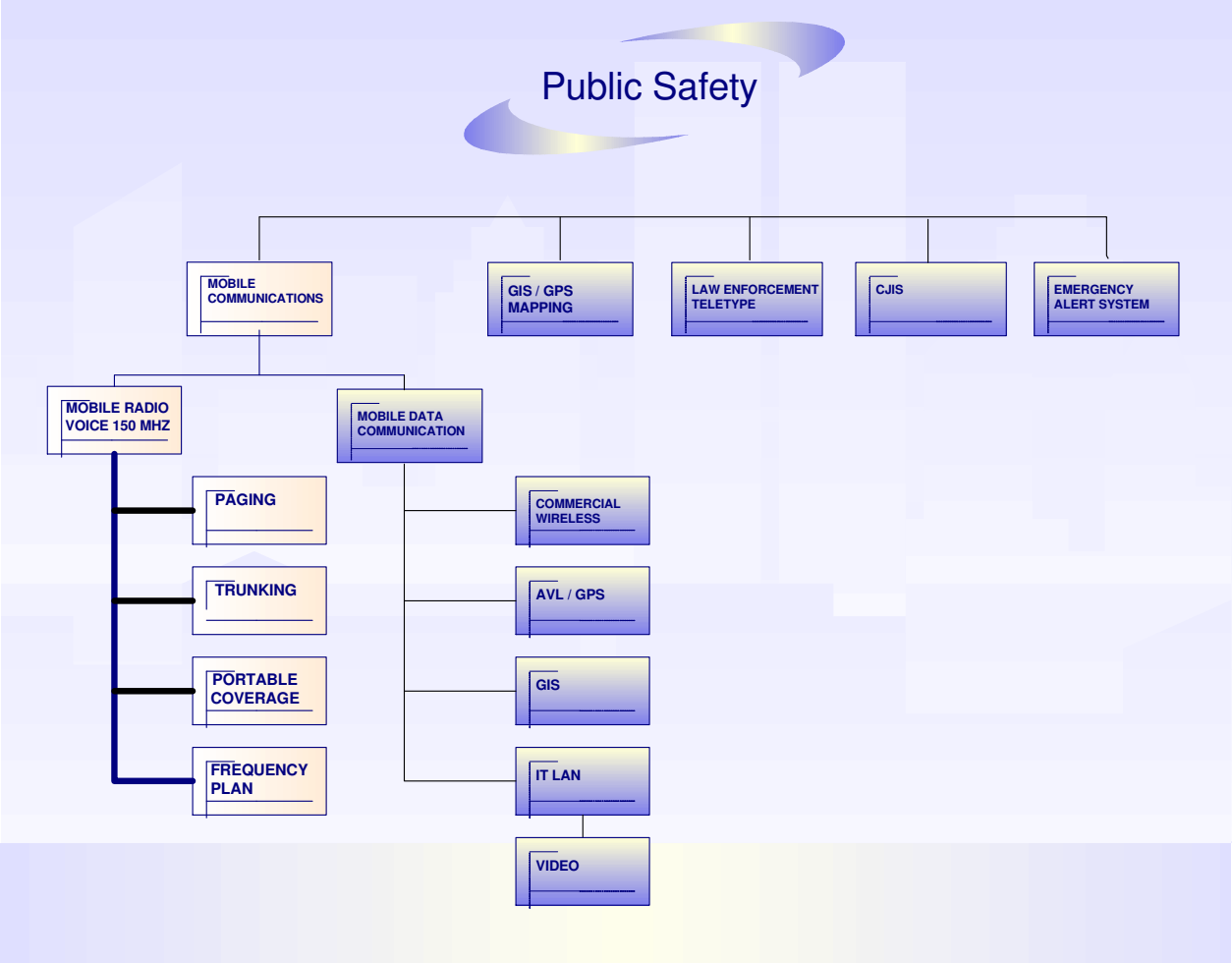


Public Safety Mobile Communications (voice)

The basic state-owned public safety radio communications infrastructure consists of 39 strategically located radio communications sites complete with antenna support structures, equipment housing structures, emergency standby power, secure site enclosures, access roads, and limited utility services. State Radio Communication, North Dakota Department of Transportation (NDDOT), and other State agencies jointly use these sites as communication facility sites.

Most Public Safety Radio Communication System users in North Dakota use analog VHF (Very High Frequency) mobile and portable radios. The backbone infrastructure for North Dakota's present VHF radio system was installed in the nineteen-seventies and is approximately thirty years old. Although the present radio system has served the state well, the system technology is old and does not afford the benefits of newer state-of-the-art technology. Technology changes at a rapid rate and the Legislature realized the need to plan for obsolescence. In 1997 the North Dakota Legislature funded and directed a professional and well experience-consulting firm be commissioned to study the public safety radio communication needs of North Dakota. Federal Engineering (FE) was selected and provided a final report in June of 1999.

Following are some of the concerns identified in the FE report, which continue to be issues that Public Safety agencies are challenged with today, and even more so after the events of September 11, 2001.

- A need to enhance system wide interoperability
- Shortage of necessary channels (especially in the larger urban areas)
- Non-State local/regional systems
- Nonexistence of a secure/encrypted voice communications system or standard
- State/regional communications overriding local tactical or situational communications
- Lack of new state-of-the-art features and capabilities
- A need to reduce interfering multiple site coverage
- The need for a more secure method of funding.

The tragic events of September 11, 2001 have accelerated the needs for a state-of-the-art radio communications system to address interoperability amongst public safety responders. Some users have implemented a variety of communication technology. In some cases this technology has not been totally interoperable with the State Radio Communication network. Thus broadening the issues of interoperability amongst public safety entities.

As the current system continues to age, maintenance of the system becomes a serious issue, resulting in the difficulty of finding replacement parts, not to mention the increased monetary investment required to maintain the obsolete system architecture.

The most critical issues facing Public Safety in North Dakota today are the issues of communications and related interoperability. Therefore our first priority must be the upgrade / replacement of the State's antiquated Public Safety Communications Infrastructure.

Mobile Data Communication (MDC)

The current MDC system has 15 sites, which are a standalone radio system operation on four dedicated duplex radio channels in the 450 MHz (megahertz) UHF (ultrahigh frequency) band. This system provides limited mobile data capability to the Highway Patrol and local system users. The MDC system is separate from the Mobile Voice Communications system, each is known as separate critical infrastructure. Each system being a valuable backup when one or the other has a failure. Expansion of this system as well as the use of private sector providers for this service will need to be addressed as a follow-on project to the mobile voice communications project.

Criminal Justice Information Sharing (CJIS)

The ability of the North Dakota criminal justice community to fulfill its public safety responsibilities depends on the effective and efficient use of resources and timely access to current, complete, and accurate information by all parties. The state of North Dakota is defining the future direction for CJIS and systems integration in support of the criminal justice community by embarking on a CJIS project that encompasses the entire criminal justice environment.

In North Dakota, as in many other states, the effective operation of the juvenile and adult Justice system is a critical factor in ensuring and improving public safety. State and local Jurisdictions across the nation invest a significant portion of their overall budget in the staff, facilities, equipment, and information technology (IT) needed to deliver justice services to the public. As is typical in many jurisdictions, the IT systems that help manage and plan criminal justice operations are often functionally limited and lack the ability to electronically share information among justice stakeholders and their systems. Nationwide, increasing attention is being given to investing prudently in IT as a key enabler for implementing change and improving information sharing across the justice enterprise.

The North Dakota criminal justice community has recognized this opportunity and has taken specific and focused steps to assess the current situation and develop an organized plan of action for improving information sharing among stakeholders. These steps have resulted in the Criminal Justice Information Sharing (CJIS) plan.

North Dakota Law Enforcement Telecommunications System (NDLETS)

Over the past two years the connectivity component of this system has migrated from a separate network, that used obsolete technology, onto STAGEnet, the state's integrated network for government and education. This system needs to be integrated into CJIS.

The NDLETS to CJIS Migration project is currently scheduled for deployment during Phase IV of the CJIS Program.

This project will complete the migration of the NDLETS network to the CJIS infrastructure so that a single type of technology provides CJIS information to the criminal justice community. This migration will expand to options available in deploying NDLETS to agencies that meet National Crime Information Center (NCIC) and National Law Enforcement Teletype System (NLETS) requirements without requiring additional network connections.

This project offers several benefits, the most important being the integration of the NDLETS capability with Web delivery systems of CJIS. This provides the opportunity to use common connectivity and support to deliver a service that is currently completely separate by design.

Automatic Vehicle Locator (AVL)

An AVL is a device that makes use of the Global Positioning System (GPS) to enable an agency to remotely track the location of its vehicles. These devices combine GPS technology, communication technology, street-level mapping, and an intuitive user interface, with the ostensible goal of improving agency services. For example, an agency using an AVL system is able to pinpoint the longitude, latitude, ground speed, and course direction of a given vehicle. The vehicle's location can be quickly found and it could be rerouted to provide timely delivery of services. The AVL issue will be part of the scope for the Mobile Radio Communications Project.

Geographic Information System (GIS) Mapping

The GIS mapping project will provide seamless, statewide GIS map layers, which include Federal/State/County/Township Roadway Centerlines. This data will be used for a variety of Public Safety Applications. Examples of such applications are the location of cell phones for E-9-1-1 applications, and mapping the location of law enforcement, NDDOT snowplows, and emergency service vehicles that have GPS units installed in their radios (Automatic Vehicle Locator).

The Division of Emergency Management has a grant earmarked for this project. These are funds that cannot be used to defray expenses for the mobile communications project.

Paging

State Radio Central Control provides a statewide radio paging services primarily to alert emergency services providers (fire, police, and medical services) concerning reported incidents that require response. Responders acknowledge the alert page signal by a voice radio message and are advised by the Central Control dispatcher of the details regarding the reported incident and the response action required. The volunteer fire and emergency medical technician's (EMT's) greatly depend on this system in the efforts to support their community's emergencies.

Emergency Alert System (EAS)

The EAS uses digital technology to distribute messages. This method provides state and local officials with a method to quickly send out important local emergency information targeted to a specific area. The information can be sent out through a broadcast station and cable system. The EAS digital signal is the same signal that the National Weather Service (NWS) uses on NOAA Weather Radio (NWR). This allows NWR signals to be decoded by the EAS equipment at broadcast stations and cable systems, and then retransmit weather warning messages almost immediately to their audiences.

North Dakota AMBER Alert Plan

The AMBER Plan is a voluntary partnership between law-enforcement agencies and broadcasters to activate an urgent bulletin in the most serious child-abduction cases. Broadcasters use the Emergency Alert System (EAS), to air a description of the abducted child and suspected abductor. This is the same concept used during severe weather emergencies. The goal of the AMBER Alert is to instantly galvanize the entire community to assist in the search for and safe return of the child.

North Dakota Health Alert Network (NDHAN)

The Health Alert Network is part of the North Dakota Department of Health's bioterrorism readiness program and was established under a cooperative agreement with the U.S. Centers for Disease Control and Prevention. The NDHAN serves as a communication network among state and local public health agencies, health care providers, hospitals and emergency management officials.

Conclusion

Since our Nation has moved into a period of uncertain times and heightened security risks, it is foremost that the State of North Dakota acts to implement an effective and reliable Public Safety Mobile Radio Voice Infrastructure. Today more then ever, a state-of-the-art communications system is an essential requirement for our public safety personnel to be successful in the protection of life and property for all Citizens of North Dakota.

The State of North Dakota must advance with full support of this initiative, as it has been over 20 years since the state last implemented a statewide plan. Users are discouraged with past studies and still no progress made. Agencies are approaching critical situations where they must/or have already started replacing aging systems. With that in mind, it is imperative that we quickly move forward with the Public Safety Mobile Radio Voice Communications initiative.

Public Safety Mobile Radio Voice Communications Project

BACKGROUND

State Radio Communications

In 1951 State Radio Communication was created by an act of Legislation (NDCC 54-23.2). This legislation empowered State Radio as a State Agency with executive control relating to the implementation, operation and use of radio communications systems and equipment within State government. This established State Radio's eligibility for radio station licensing under the Public Safety Radio Service section of the FCC rules and Regulations.

Initially, the state operated within the limited capabilities of a low band (30-50 MHz) system then moving into a Very High Frequency (VHF 150 MHz) band. Operating in this VHF band allowed for additional frequencies, smaller system components, and paired frequencies for mobile repeater operations. This change improved the overall efficient and effective use of radio communication throughout the state.

Primarily, the statewide public safety radio communications has been the responsibility of State Radio Communications. State Radio's primary function has been to provide communications services to the Highway Patrol and other law enforcement agencies and public safety entities throughout the state.

On September 18, 2003, Governor John Hoeven announced the consolidation of the Division of Emergency Management and North Dakota State Radio to more closely incorporate security and emergency operations with the state's communications network.

Previously, public safety communications and dispatch responsibilities of State Radio functioned separately from the Division of Emergency Management. The announcement combines the two agencies into an integrated State Operations Center (SOC). This will enhance the efficiency and effectiveness of statewide, day-to-day public safety communications.

Following is an overview of the current State Operations Center system features (non-State Operations Center Facilities are not included):

- 36 radio tower sites, distributed for statewide coverage
- VHF hi-band, analog radio equipment
- No implemented encryption capability
- Multiple dedicated 4-wire leased Telco circuits for voice and control
- Collocation on NDDOT sites (shared building, utilities, tower and maintenance)
- Three statewide channels
- Two duplex, one simplex channel
- Different functional and operational uses on each channel
- Central dispatch primarily for Highway Patrol
- Statewide radio paging
- E-911 emergency dispatch primarily for rural, low population counties, and backup for some non-State emergency dispatch centers.

The State Operations Center is dedicated to providing efficient voice and data public safety communication systems to federal, state and local agencies. These systems rapidly transmit messages and information to aid law enforcement, emergency medical, fire and disaster emergency services on a 24-hour basis.

The agency is responsible for warning the states' residents in case of floods, tornados, blizzards or attacks. The State Operations Center serves as the coordinating agency to facilitate the orderly and effective development and implementation of 9-1-1 systems within North Dakota. Additionally, the State Operations Center acts as a backup dispatch in case of county 9-1-1 system failures.

The State Operations Center assists with communications during natural disasters, law enforcement functions and other public safety situations. On-going training programs are provided to increase the efficiency and effectiveness of the State Operations Center personnel and users of the communications systems. The agency utilizes 10 major communication systems to provide modern communications to all law enforcement, emergency service and public safety agencies.

Major communication systems are: the State Operations Center System, ND Law Enforcement Telecommunications System, National Crime Information Center, National Law Enforcement Telecommunications System, National Warning System, Statewide Paging System, Statewide Emergency Telephone System, Statewide Frequency Coordination System, Computer Aided Dispatch System and 9-1-1 System.

Department of Transportation

Since 1961 the North Dakota Department of Transportation (NDDOT) has maintained the State Operations Center Communications infrastructure. The NDDOT also operates a separate analog radio system from that of the State Operations Center. Primary function has been one of maintenance, safety and dispatch for the state highway system. The infrastructure consists of 39 facilities, which include tower support structures, antenna, housing of equipment and standby power facilities. In addition, the NDDOT operates and maintains approximately 750 mobile radios. NDDOT current configuration has VHF voice communications at all 39. The State Operations Center has VHF voice operations at 36 sites and UHF mobile data at 15 sites.

Highway Patrol

The primary user of the State Operations Center system has been the ND Highway Patrol (NDHP). There are approximately 150 Highway Patrol units who receive primary dispatch from the State Operations Center operations statewide. In addition, 95 Highway Patrol units are equipped with mobile data computers, which are linked to the state data network via 15 UHF transmitter sites, located in the 8 major urban areas.

State Division of Emergency Management

The Division of Emergency Management (DEM), delivers disaster relief services over the communications infrastructure provided by the statewide coverage of the radio systems controlled by the State Operations Center Communications and the local radio coverage provide by city and county public safety service providers.

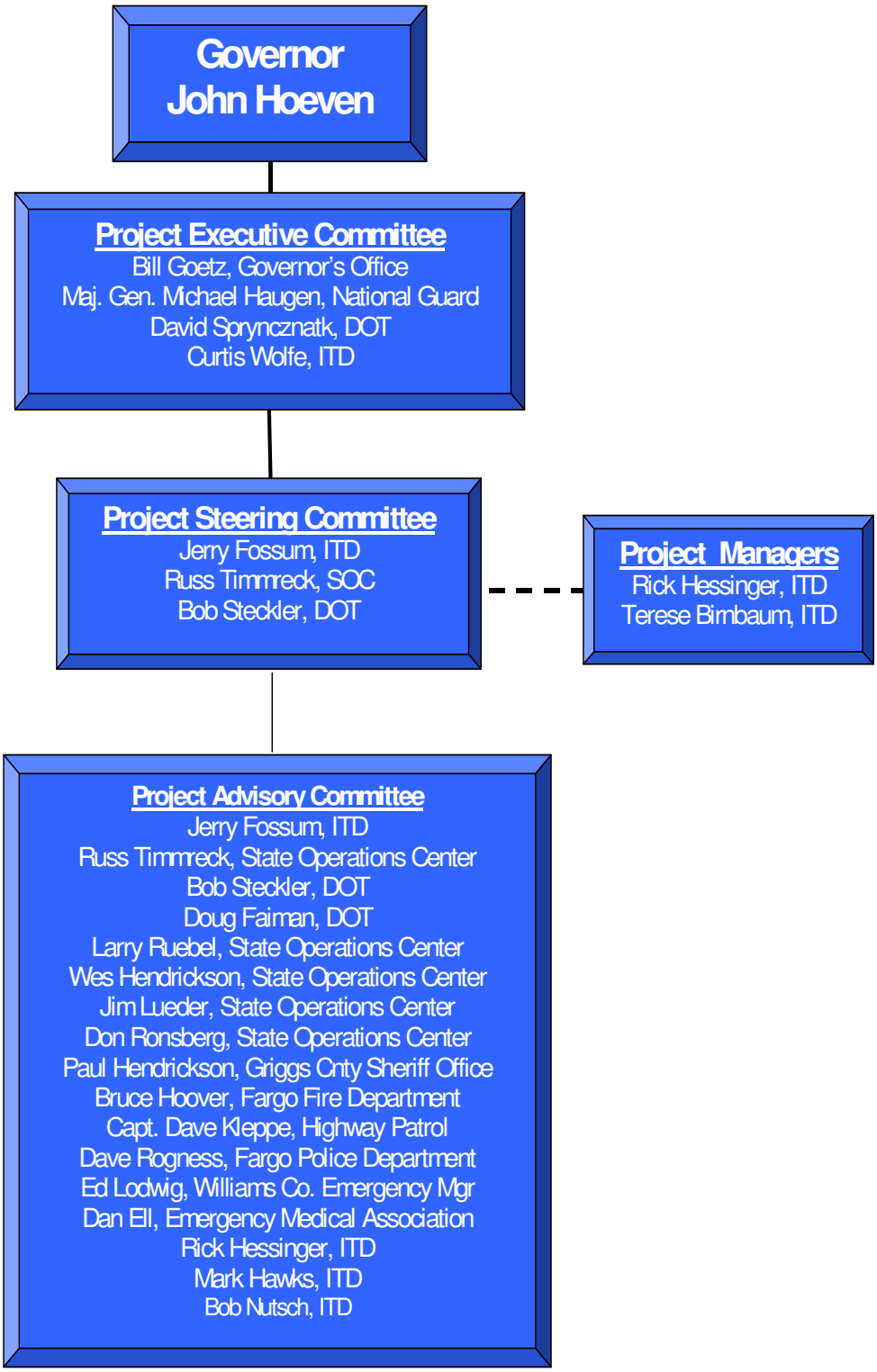
Information Technology Department

The primary provider of the wired interconnectivity of the 39 locations has been the Information Technology Department (ITD). Past legislation has authorized the reorganization of the former Information Services Division (ISD) into the Information Technology Department (ITD) under the direction of the executive branch and directed by the Chief Information Officer (CIO) of the state.

Since the primary function of ITD and the CIO is to manage and oversee information technology initiatives and expenditures within state government, ITD will be the project lead for the Mobile Voice Communications project.

Project Organization

Organizational Chart



Roles and Responsibilities

ROLE	NAME/AGENCY	RESPONSIBILITIES	TIME COMMIT-MENT
Executive Committee	Bill Goetz, Office of the Governor General Michael Haugen, National Guard David Sprynczynatk, DOT Curtis Wolfe, ITD	Assess and review recommendations from the Project Advisory Committee Make final business decisions for project	<5%
Project Steering Committee	Jerry Fossum, ITD Russ Timmreck, SOC Bob Steckler, DOT	Facilitate Project Advisory Committee meetings Guide the direction of the project and assist the project Team with project issues Make recommendations to Exec Comm.	10-15%
Project Advisory Committee	See Org. Chart	Review the project's status on a regular basis Attend and participate in meetings Complete tasks as assigned Communicate project information to their stakeholders Build consensus of future direction	5-15%
Project Managers	Rick Hessinger, ITD Terese Birnbaum, ITD	Lead the assessment, project planning process and implementation plan Ensure project meets objectives and is on time and on budget	80-95%
Large Project Oversight	Dirk Huggett, ITD Nancy Walz, ITD	Oversight of handling of a large project Serves as large project mentor Supports and guide project team	15-25%

Project Advisory Committee

The formation of an Advisory Committee consisting of State agencies, county and municipal organizations are commissioned with the task of developing and implementing a statewide Public Safety Mobile Voice Communications Plan. The committee is comprised of representatives of various public safety entities. These individuals represent the public safety user community, and as such understand the issues of communications required to provide a safe and secure environment for all citizens of North Dakota.

This committee is tasked with building consensus amongst the members regarding the reviewing, recommendations, and selection for direction of the Mobile Voice Communications Project. Together this group forms a consensus agreement and plays a vital role with all stakeholders, in the fact that they have contributed and understood the goals, objectives and work plan activities for this project to be a success. The committee considers technology solutions and related issues; a consensus is then formed, decisions made, and appropriate direction is determined. This committee is also charged with informing their special interest group(s) regarding the direction and the progress of committee activities.

ISSUES

Selected Statewide Alternatives

Consensus amongst the advisory committee has recommended that the Statewide system:

- Provides narrowband capable equipment.
- Adopt APCO Project 25 standards.
- Allow for dual mode operation (analog/digital) with phasing out legacy analog systems over time.
- VHF 150 MHz band was selected over the 800 MHz band.
    - Allows for better statewide mobile coverage.
    - Requires fewer towers.
    - Cost is significantly less.
    - Surrounding States also implementing VHF solutions.
    - Federal Government using VHF.

Consideration was given to the selection of VHF 150 MHz versus the 800 MHz system solution. The 800 MHz provides a reduced radio coverage capability due to the fact that the high frequency of operation introduces increased propagation and equipment transmission losses. Wide area coverage from a single site is also restricted by the FCC Rules that limit the effective radiated power and antenna heights of the transmitting equipment. The 800 MHz Public Safety band was created primarily because there were no more frequencies left to use on the 150 and 450 bands. The 800 MHz systems are extremely costly to implement and do not cover well without a lot of tower sites. They are subject to interference from Cell-Phones sites, and expensive to maintain.

A VHF 150 MHz Conventional Radio System would provide dependable radio service, keep maintenance cost low, use fewer tower sites and provide much better radio coverage.

FCC refarming issue has led the decision to only allow narrowband capable equipment. The consensus is that the replacement of the current wideband equipment will only be replaced with equipment that meets the FCC's refarming requirements. Any new equipment purchased must be compliant with the required 12.5 kHz narrowband FCC standards.

Anticipated benefits

- Consolidate the existing SOC and other Public Safety systems.
- Enhanced interoperability at the federal, state, local, and county levels.
- Compatibility with digital and existing analog systems.
- Share channels where practical with similar VHF hi-band systems.
- Capability for narrowband channelization.
- Provision to system-wide digital encryption.
- Potential to reduce or eliminate frequency reuse at adjacent sites.
- Stay in VHF hi-band.
- Universally accepted standards.
- State of the art technology.
- Open system architectural design.
- Facilitates user-friendly migration path to digital technology.

Regulatory Mandates

The FCC Released a Second Report and Order (R&O) and Second Further Notice of Proposed Rule Making (FNPRM). In the Matter of Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies. (WT Docket No. 99-87; RM-9332)

The decisions, which were made mandating the transition to narrowband technologies in the VHF and UHF refarming bands, include:

- **After January 17, 2004** * - The Commission will not permit applications for new systems seeking to operate with a bandwidth greater than 12.5 kHz. **FCC announced a delay for this deadline.*
- **After January 17, 2004*** - The Commission will not permit applications modifying a system using more than 12.5 kHz of bandwidth if that application would expand the authorized contour of the licensee. * *FCC announced a delay for this deadline*.
- **Beginning January 1, 2005**, prohibits the certification of any equipment capable of operating at one voice path per 25kHz of spectrum, i.e., multi-mode equipment that includes a 25kHz mode.
- **Beginning January 1, 2008**, prohibits the manufacture and importation of any 25kHz equipment (including multi-mode equipment that can operate on a 25kHz bandwidth).
- **Beginning January 1, 2013**, requires non-public safety licensees using channels in these bands to deploy technology that achieves the equivalent of one voice path per 12.5kHz of spectrum.
- **Beginning January 1, 2018**, requires public safety licensees using channels in these bands to deploy technology that achieves the equivalent of one voice path per 12.5kHz of spectrum.

These mandates will require users not operating within these frequency bands, to eventually replace noncompliant equipment.

PROJECT OVERVIEW

Purpose

A project charter provides a summary of the project, and serves as the basis for a more detailed project plan for Mobile Voice Communications. This plan will include details on all aspects of the project and how the project will be managed. The approval of the project charter indicates a formal initiation to move forward with the Mobile Voice Communications project.

Shared Vision

In the effort to save lives and protect property, statewide public safety agencies share a vision of improving communications, to achieve greater interoperability and enhanced communications between local, state, and federal public safety agencies. Terrorist activities and natural disasters, such as wildfires and floods will dictate that public safety agencies cannot effectively protect life and property without effective communications. The shared vision is one wherein no individual in North Dakota shall be at risk due to the lack of an effective public safety communication system.

Mission

In the past, public safety agencies have updated communication systems to meet their own specific mission requirements. Recent tragic events have brought public safety agencies to the realization that they alone cannot solve their issues of communications interoperability.

Making public safety communications more effective, efficient, and cost effective is the overall driving force behind this initiative. Enhancing interoperability capabilities between all local, state, federal and tribal public safety organizations shall receive the highest level of commitment to guarantee a reliable, state-of-the art communication system is in place to ensure the effectiveness of public safety personnel.

The Public Safety Mobile Communications Project Advisory Committee and the Project Team have the responsibility of developing and implementing a statewide Public Safety Mobile Voice Communication Project Plan.

Scope

This project will provide for an affordable and scalable statewide wireless Public Safety mobile voice communications infrastructure that will allow reliable and interoperable voice communications to all federal, state, county and local entities. The project will be designed to allow for a phased migration to a digital based communications system by the end users. A phased migration means the end users will be able to operate in a dual mode (analog or digital) based on timelines for the phase out of analog equipment to digital equipment. The project will include system design, appropriate frequency plan, and all appropriately related system components required for the public safety mobile communication infrastructure.

The scope of this project is limited to the State of North Dakota's mobile radio (voice) communication infrastructure and it should be understood that the actual upgrade of local system user equipment would be the responsibility of the respective local system users, (i.e. local, city, county, state and federal system users).

Business Case

The development of the Public Safety Mobile Voice Communications Project Plan will propose alternatives to enhance the issues of reliability, coverage and interoperability, and the problems of congestion and interference. Realizing that existing equipment will be replaced as it wears out and that parts are no longer available for some of the equipment, a stance of do nothing has become no longer a viable option. The Federal Communications Commission (FCC) mandated compliance with frequency band changes, thereby forcing older equipment out of operation. Along with the Homeland Security Funding availability, it is apparent that there is an immediate need to update Public Safety's Mobile Voice Communications.

The State has recognized the potential benefits of implementing improved mobile communications technologies on the State's public safety infrastructures for some time. Much analysis and justification was done in preparation for this comprehensive and updated planning effort. In 1997, the State Legislature authorized the funding to develop a new plan. It's been over 20 years, since the State of North Dakota completed its last statewide plan for public safety communications. Studies have been done in the past; users are eager to move forward with a plan, as systems are aging and becoming obsolete, as well as arising interoperability issues.

The Project Team will use previous work, a top-level conceptual design completed by Federal Engineering in June of 1999, and information from competitive industry sources to develop the plan.

The overall direction of the project plan recommended by the Advisory Committee will consist of an APCO Project 25 (a national standard developed by the Association of Public-Safety Communications Officials (APCO)), digital, non-trunked (initially), VHF 150 MHz infrastructure utilizing 36 sites with interconnectivity via the NDITD backbone. This plan will allow public safety entities to migrate to interoperable digital mobile communications at their own pace. Local and state public safety agencies support the plan because it will provide for an interconnected statewide communications system enhancing the safety of our citizens and emergency responders.

Goals

The primary goal will provide for an affordable and scalable statewide wireless Public Safety mobile voice communications system that will provide reliable and interoperable voice communications with the expectation of meeting not only today's needs, but also needs well into the future for all state, county and local entities. The date of June 30, 2004 is the goal for having a contract awarded, so that Public Safety agencies are knowledgeable to what type of system will be deployed, allowing them to purchase compatible components.

Following are some of the major project deliverables.

- Develop an Advisory Committee
  - October 2003
- Functional Requirements Review
  - November 2003 – February 2004
- Project Charter
  - January 23, 2004
- Request for Proposal (RFP) to Hire Consultant
  - January 21, 2004
- Select Consultant
  - February 13, 2004
- Assist Consultant with RFP Development
  - February, March 2004
- RFP Evaluation Team to select vendor, product, and technology
  - May 2004
- Develop Conversion and Implementation Plan
  - July 2004
- Deploy System Components
  - Start in the 4th Qtr 2004
- Pilot Project
  - 4th Qtr 2004
- Verify System Functionality and Components
  - 4th Qtr 2004
- Update/refine system components from Pilot
  - 1st Otr 2005
- Implement Systems at Sites
  - As funding allows
- Training Issues Addressed
  - Throughout.
- New operational statewide Public Safety communication infrastructure
  - 2005 – 2007
- Mobile Migration
  - 2005 - 2009

Stakeholders

Ultimately, this project will benefit all citizens. At the state government level, there exist four main stakeholders in public safety communications: the State Operations Center Communications; Department of Transportation; Highway Patrol, and the Information Technology Department.

Additional Government stakeholders: National Guard, Bureau of Criminal Investigations, Game and Fish, State Penitentiary, Bureau of Indian Affairs, Parks and Recreation, Fire Marshall, Emergency Management.

Local level stakeholders: law enforcement agencies, emergency management, medical services and fire services.

The Mobile Voice Communication project plan should define that there will be clear intent of all stakeholders to support a common infrastructure and transmission network.

Critical Success Factors

The actions that must occur in order for the project to be a success are the project's critical success factors.

Critical Success Factor	Measurements
A detailed project plan is developed.	The Project Advisory committee approves a project plan detailing the entire project scope.
Increase the opportunity for interoperability.	Various Public Safety entities are able to communicate effectively.
Upgrading obsolete systems.	
Available Funding.	Plan is developed in a staged or phased approach to allow for funding to be spread out over multiple funding years.
Communication of critical project information is performed in a timely and regular manner.	Hold regularly scheduled meetings. Issue monthly project status reports Maintain current information on ITD's web site
The new system has the ability to handle both digital and analog transmissions. Allowing local entities to migrate as funding is available.	Equipment installed has the capacity to handle current level of analog transmissions as well as digital transmissions during migration to digital.

Projected Costs

A significant source of the financing for this project will be backed by Homeland Security grants. Funding from the 2002 and 2003 Congressional funding cycle has amounted to $90,000 and $1,127,500 respectively. Projection for funding from the 2004 funding cycle is $90,000 from a bio-terrorism grant and an additional $1,500,000 to $2,000,000 in Homeland Security funds. Based on these projections, total available Homeland Security funding for the project through 2005 will amount to a potential of $3,307,500. The potential for additional Homeland Security grant funding beyond the year 2005 has a high probability.

Other potential funding sources are Federal Interoperability grants and the potential for State General Fund dollars.

Since this is such a large capital expenditure, it is not feasible for all the funding to be appropriated by the legislature for the entire acquisition cost. A phased approach will be the direction. Spreading the cost out over a several years, anticipating using Grants available from The Homeland Security agency and the funding appropriated from the general fund will allow for a significant portion of this project to be accomplished.

Project System Cost

These cost are just projected at this time, without doing an extensive study up front, we are unaware of the exact sites we will require for the type of technology that is selected. These cost do not include any ongoing maintenance cost. When a vendor's technology and a contract have been negotiated, these costs will become accurate. Costs used for this document are taken from our current price list and from the previous FE Final Report of 1999.

Initially estimates will include upgrading the existing 36 tower sites to the dual mode (digital and analog) VHF 150 MHz APCO PROJECT 25 Standard. The following cost details an estimated unit cost for provisioning a single four-channel VHF radio site.

Four Channel Site Radio Equipment Cost

➢ 3	Base/Repeater Stations @ $15,000	$45,000	
	○ Channel 1 State Operations Center (Digital)		
	○ Channel 2 State Operations Center (Digital)		
	○ Channel 3 & 4 State Operations Center (Analog - Trans/Rec)*		
	*Supplied by DOT from existing system		
	○ DOT's digital station		
➢ 1	Four Channel Combiner (common equipment)	22,000	
➢ 1	Channel Bank, (on site & control center)	24,000	
➢ 2	Digital Interface Unit (without Cabinet)	14,200	
➢ 1	Base Interface Module (BIMS)	1,200	
	Total equipment cost.....		**$106,400**
➢ 1	Equipment installation, checkout and optimization (5% of equipment costs)		**$5,320**
➢ 1	Transmit Antenna System	$11,750	
➢ 1	Receive Antenna System	4,200	
➢ 2	225 ft. 7/8" RF Trans. Line @ $1,475	2950	
	Antenna Total (200 foot tower).....		**$18,900***
	Site Total		**$130,620**

36 existing sites @ $130,620 = $4,702,320

*The above estimated costs for the antenna system were taken from the 1999 FE study, as qualified by the DOT, SOC and ITD. These costs are for a 200-foot tower. 300-foot tower sites would add an additional $1800. Without having an overall needs assessment of the current antenna systems, assumptions are being considered that each site requires replacement.

The FE 1999 Study did state that additional sites would be required. Without doing an extensive study at this time and without knowing the type of solution that will be deployed per the vendor selected, we are unable to quantify the appropriate tower site locations that are required. We are able to estimate a new site cost from a newly constructed site in Fargo at $268,000, which includes infrastructure, landscape, fencing and install. Note that this cost does not include the cost of the land. No consideration was noted in regard to the tower site environment. Again, a needs assessment will go along with the type of solution presented by the vendor.

Networking Costs

T1 circuitry will be added to each site. The initial projection for T1 connectivity at 36 sites would be approximately: $162,457. The monthly reoccurring cost is projected to be approximately: $33,646.03. Yearly cost is $403,752.36.

Other Projected Communication Equipment Costs

Mobile Radio Costs

- Projected average mobile cost
  - High power $2,834
  - Mid power $2,483
- Projected costs for average mobile install $200
- Projected average portable cost $2,485
- Projected cost of vehicle repeater system $2,000

Note: There are various models of mobile and portable radios available and the above prices indicate an average cost. This equipment cost will be the responsibility of the user agencies.

Console Modification Costs (Fraine Barracks Control center)

These cost are unknown at this time, and could be relevant to the type of technology that is selected and the vendor selection. Encryption capability is estimated to cost approximately $10,000 for console software.

Administrative Costs

Administrative costs for basic frequency coordination (more extensive planning would be require if implementing trunking), user re-licensing, procurement for hiring a consultant, logistic support & training and documentation of revised operational plans related to this system change out is estimated at: $200,000.00

Planning and System Design Costs

A planning project related to obtaining useable channel frequency pairs, the basic engineering design for a proposed radio system, and the development of an RFP for procurement of the system is estimated at: $250,000.00. Note this amount could be more or less based on yet to be determined system design issues, i.e. trunking, etc.

Maintenance & Test Equipment

A maintenance solution will need to be addressed throughout the RFP process. If outsourced to the NDDOT there will also be cost associated for the proper test equipment and also the required training.

Automatic Vehicle Locator (AVL)

AVL systems generally include a network of vehicles that are equipped with a mobile radio receiver, a GPS receiver, a GPS modem, and a GPS antenna. This network connects with a base radio consisting of a PC computer station as well as a GPS receiver and interface. GPS uses interactive maps rather than static map images on the Web. However, many factors affect the cost of an AVL installation, including in-vehicle hardware, field hardware, control-center hardware, software, training, and support. Infrastructure estimated at $50,000 with redundant servers. Although the cost for a GPS system can be as low as $500 for the core equipment per vehicle (user add on).

Additional State Funding Alternatives

The following are some of the alternatives to general funds that could be explored at the state level. These alternatives are not limited to the ones identified below, and additional alternatives could also be explored at the local and federal levels.

- State Lottery (generated revenue for the state general fund could be a possible source available for use by public safety agencies.)
- State Tax Revenues (sales and gross receipts taxes, income taxes, personal property taxes, and corporate income taxes)
- State user fees (i.e. motor vehicle registration/licenses etc.)
- Surcharges (moving traffic violations, crime/court fillings, wireless 911 service by charging monthly user fees, etc.)
- State Bonds

Strategy Statement

The State of North Dakota, Information Technology Department, the State Operations Center, and the Department of Transportation will solicit proposals for public safety radio consulting services. The consultant will help select a public safety equipment provider that will partner with the state in the deployment of a new public safety radio infrastructure.

Project Risks

Risks are uncertain events or conditions that may affect the project. Risk is made up of two components: (1) The probability that the project will experience an undesired event such as cost overrun, schedule slippage, safety mishap and failure, and (2) the consequence, impact or severity of the undesired event.

Risks for the Public Safety Mobile Communications Project known to date and the actions to be taken are listed below. NOTE – Project Risks will be further detailed in the project plan:

Risk ID	Risk	Risk Probability	Risk Impact	Risk Priority	Risk Assignment	Risk Response Plan
1	Agreement and understanding between stakeholders regarding the goals, objectives and work plan activities.	Moderate	High	1	Project Chairs Project Team	Make sure communication of project scope, schedule and costs are communicated to the Advisory Committee.
2	ITD, DOT, DEM Resources available and committed.	Moderate	High	1	Project Chairs	Project plan and schedule will need to be signed-off by all resource owners.
3	Financial Resources are unavailable	Moderate	High	1		Securing Homeland Security Grant Money.
4	Do Nothing Stance	Low	High	3		A well-defined project plan will show the justification of why this is not in the best interest.

Risk Priority Table			
	Impact (on cost, time, or scope)		
Probability	Low	Moderate	High
High	2	1	1
Moderate	3	2	1
Low	3	3	3

Project Charter Approval

I approve the Project Charter as outlined in this document, and commit staff resources in order to meet the project goals.

Bill Goetz, Chief of Staff, Office of the Governor	Date
Michael Haugen, Major General, National Guard	Date
David Sprynczynatk, Director, Department of Transportation	Date
Curtis Wolfe, CIO, Information Technology Department	Date